

The MCJ Model Workbook

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Preface

The first chapter discusses the use of the latest version of the MC model—denoted the MCJ model—on the website. The remaining chapters discuss various experiments that can be performed using the model. These are experiments that are in **Macroeconometric Modeling: 2018** (henceforth called **MM**), which is the main reference for the MCJ model. You can duplicate the results in **MM** by doing the experiments.

If you run an experiment, you can examine the results for any country and any variable in the model, including the bilateral trade flows—exports from country i to country j .

You will see that for most experiments the historical errors are added to the equations before the experiment is performed. This allows the perfect tracking solution to be the base path, from which changes can then be made. If you did not use the historical errors, you would have to first create a base path of predicted values, to which the new predicted path (after the experiment has been performed) would be compared. See Section 2.6 of **The US Model Workbook** for more discussion of this.

There may be a few rounding differences between the results in **MM** and the results you generate using the website. In addition, when you change CG for a particular experiment, you will see that the actual changes differ slightly from the changes you entered. This has to do with the fact that the left hand side variable of the CG equation is CG divided by $YS_{-1} \cdot PX_{-1}$, where PX is endogenous. The way the coding works on the website, changes in PX affect your chosen values of CG . This is not true of the coding used to generate the results in **MM**. The differences are, however, small and can safely be ignored.

Finally, this workbook is not self contained; it assumes that the reader has some understanding of the model. You should read the relevant parts of **MM** before using this workbook.

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Chapter 1

The MCJ Model on the Website

This chapter discusses practical things you should know when working with the MCJ model. It relies on Part 3 and Appendices A and B in **MM**. If you are planning to work with the MCJ model, it may be helpful to have hard copies of this material available for ease of reference. In what follows all references to sections, subsections, and tables are to those in **MM**.

1.1 Notation

The notation for the variables in the ROW model is presented in Tables B.1 and B.2 in Appendix B. Two letters denote the country (CA for Canada, JA for Japan, etc.), and the abbreviations are given in Table B.1. Up to five letters denote the variable (C for consumption, I for investment, etc.), and the names are given in Table B.2 in alphabetical order. The complete name of a variable for a country consists of the country abbreviation plus the variable name, such as CAC for Canadian consumption, JAI for Japanese investment, etc. The two letters EU denote the European countries in the model that are part of the EMU. These are: AU, FR, GE, IT, NE, FI, BE, GR, IR, PO, SP. (Luxembourg, which is also part of the EMU, is not in the model.) (GR joined January 1, 2001.)

1.2 Solution Options

There are three choices you can make regarding the solution of the MCJ model.

1. The prediction period, where the default is 2014-2016.
2. The number of within country iterations (denoted LIMITA) and the number of across country iterations (denoted LIMITB). The defaults are 10 for LIMITA

and 10 for LIMITB. As discussed below, these options are useful for checking if the model has successfully solved.

3. Whether or not you want to use the historical errors. The default is to set all the error terms equal to zero. If you use the historical errors and make no changes to any of the exogenous variables and coefficients, then the solution values of the endogenous variables will be the actual values—a perfect tracking solution—aside from rounding error. This option can be useful for multiplier experiments, as discussed below.

The way in which the model is solved is discussed in Section 7.6 in Appendix B. Because the MCJ model (unlike the US model alone) is not iterated until convergence (because LIMITA and LIMITB above are fixed), it may be the case that after the program finishes the model did not really solve. If you are concerned about this, there is one check that you can perform, which is to increase LIMITA and LIMITB. If the model has correctly solved, it should be the case the increasing LIMITA and LIMITB has a very small effect on the solution values. You can thus increase LIMITA and LIMITB and see if the output values change much. If they do not, then you can have considerable confidence that the model has been solved correctly. The maximum values of LIMITA and LIMITB that you are allowed are 15 and 15, respectively. Another check is that if the predicted values are either extremely large or extremely small, then the model is unlikely to have solved. If this is true, you have probably made extreme changes to one or more exogenous variables or coefficients.

1.3 Changing Stochastic Equations

There are four changes you can make to any of the stochastic equations:

1. Drop (or add back in) an equation. When an equation is dropped, the variable determined by the equation is taken to be exogenous, and it can be changed if desired. The default values for the variable are the historical values.
2. Take an equation to begin after the beginning of the basic prediction period. When an equation begins later than the basic prediction period, the variable determined by the equation is taken to be exogenous for the earlier period, and it can be changed if desired. The default values for the variable are the historical values. For quarterly countries the period that you want the equation to begin is a quarter, not a year. You can, for example, have an equation begin in 2014:2 when the basic prediction period is 2014-2016.

3. Add factor an equation, where the add factors can differ for different periods. For quarterly countries the add factors are for individual quarters, not years.
4. Change any of the coefficients in the stochastic equations. You cannot add variables to the equations.

1.4 Creating Base Datasets

In most cases when working with the model you will probably want to use the historical errors (i.e., set the errors equal to their estimated values and take them to be exogenous). If for any period you use the historical errors and solve the model with no changes in the exogenous variables and coefficients, you will get a perfect tracking solution. This is usually a good base to perform various experiments.

1.5 Treatment of the EMU Regime

As noted above, there are 10 countries in the model that are part of the EMU beginning January 1, 1999: AU, FR, GE, IT, NE, FI, BE, IR, PO, and SP. GR joined January 1, 2001. EU denotes these countries. Prior to 1999 each of these countries except GR has an estimated interest rate reaction function (equation 5), and each country except IT, FI, IR, and GR has an estimated long term interest rate equation (equation 6). In addition, GE has an estimated exchange rate equation where the exchange rate explained is the DM/\$ rate, and each of the other countries has an estimated exchange rate equation where the exchange rate explained is the local currency/DM rate (equation 7).

For the EMU regime, which begins in 1999:1 for 10 countries and 2001:1 for GR, equations 5, 6, and 7 for the individual EMU countries are dropped from the model. EU equations 5, 6, and 7 are added beginning in 1999:1.

The software allows you to change the EU interest rate and exchange rate equations. The “country” that you will click is EU. Remember that these equations are only relevant from 1999:1 on. Also remember that the equations that have been dropped for the individual EMU countries from 1999:1 on are not part of the model from 1999:1 on. They only matter prior to 1999:1. For GR the switch date is 2001:1.

Chapter 2

Some Properties of the Model

Some properties of the model are reported in Section 1.2, *Has Macro Progressed?*, in MM. The prediction period is 2000:1–2005:4. If you do the following experiments using the MCJ model, you will exactly duplicate these results.

2.1 COG Increase

This experiment shows that the output multiplier for an increase in government purchases of goods of 1.0 percent of real GDP is 1.6 percent of real GDP after four quarters.

1. Click “Solve” under “MCJ Model” in the left menu and copy MCJBASE to a dataset you have named.
2. Click “Set prediction period” and set the period to be 2000 through 2005.
3. Click “Examine the results without solving the model.” List the values of *GDPR* for 2000:1–2005:4. Take 1.0 percent of each of these values, and call them the “*COG* increases.” Then return to the main menu page.
4. Click “Use historical errors” and set the option to use the historical errors.
5. Click “Change exogenous variables” and ask to change *COG* for the United States. Type in the *COG* increases quarter by quarter. Be sure to save the changes once you are done.
6. Click “Solve the model and examine the results”.

2.2 TRGHQ Increase

This experiment shows that the output multiplier for an increase in real federal government transfer payments of 1.0 percent of real GDP is 0.8 percent of real GDP after six quarters.

1. Click “Solve” under “MCJ Model” in the left menu and copy MCJBASE to a dataset you have named.
2. Click “Set prediction period” and set the period to be 2000 through 2005.
3. Click “Examine the results without solving the model.” List the values of GDP for 2000:1–2005:4. Take 1.0 percent of each of these values, and call them the “ $TRGHQ$ increases.” Then return to the main menu page.
4. Click “Use historical errors” and set the option to use the historical errors.
5. Click “Change exogenous variables” and ask to change $TRGHQ$ for the United States. Type in the $TRGHQ$ increases quarter by quarter. Be sure to save the changes once you are done.
6. Click “Solve the model and examine the results”.

2.3 D1G Decrease

This experiment shows that the output multiplier of a personal income tax rate decrease of an amount equivalent to the real transfer payment increase in the above experiment is similar to the output multiplier of the transfer payment increase.

1. Click “Solve” under “MCJ Model” in the left menu and copy MCJBASE to a dataset you have named.
2. Click “Set prediction period” and set the period to be 2000 through 2005.
3. Click “Examine the results without solving the model.” List the values of GDP , THG , YT , $TAUG$, POP , and PH for 2000:1–2005:4. Compute for each quarter:

$$D1G^{new} = (THG - .01 \cdot GDP)/YT - (TAUG \cdot YT)/(POP \cdot PH)$$

Then return to the main menu page.

4. Click “Use historical errors” and set the option to use the historical errors.

5. Click “Change exogenous variables” and ask to change $D1G$ for the United States. Type in the $D1G^{new}$ values quarter by quarter. Be sure to save the changes once you are done.
6. Click “Solve the model and examine the results”.

2.4 RS Increase

This experiment shows that the real output multiplier of an interest rate increase of 1.0 percentage points is -0.6 percent of real GDP after eight quarters.

1. Click “Solve” under “MCJ Model” in the left menu and copy MCJBASE to a dataset you have named.
2. Click “Set prediction period” and set the period to be 2000 through 2005.
3. Click “Use historical errors” and set the option to use the historical errors.
4. Click “Drop or add equations” and drop the RS equation for the United States (equation 30).
5. Click “Change exogenous variables” and ask to change RS for the United States. Then add 1.0 to all the values. Be sure to save the changes once you are done.
6. Click “Solve the model and examine the results”.

If you do this experiment for the 1994–1998 period and you decrease RS by 1.0 rather than increase it, you will duplicate the results in Table 1 in Subsection 4.4.2, “The Effects of a Decrease in RS ,” in **MM**.

2.5 CG Increase

This experiment shows that wealth effects from stock market changes are fairly large in the model. The experiment is an increase in CG of 10 percent of nominal GDP (40 percent at an annual rate) in 2000:1.

1. Click “Solve” under “MCJ Model” in the left menu and copy MCJBASE to a dataset you have named.
2. Click “Set prediction period” and set the period to be 2000 through 2005.

3. Click “Examine the results without solving the model.” List the value of GDP for 2000:1. Take 40.0 percent of this value, and call them the “ CG increase.” Then return to the main menu page.
4. Click “Use historical errors” and set the option to use the historical errors.
5. Click “Drop or add equations” and for the United States drop the CG equation (equation 25).
6. Click “Change exogenous variables” and ask to change CG for the United States. Type in the CG increase for 2000:1. Leave the other quarters the same. Be sure to save the changes once you are done.
7. Click “Solve the model and examine the results”.

2.6 US Price Shock, RS exogenous

This experiment shows that positive price shocks are contractionary even if the Fed keeps the nominal interest rate unchanged. This feature has important implications for monetary policy.

1. Click “Solve” under “MCJ Model” in the left menu and copy MCJBASE to a dataset you have named.
2. Click “Set prediction period” and set the period to be 2000 through 2005.
3. Click “Use historical errors” and set the option to use the historical errors.
4. Click “Drop or add equations” and drop the RS equation for the United States (equation 30).
5. Click “Modify equation coefficients” and ask to modify equation 10, the PF equation, for the United States. Then add .005 to the fifth coefficient in the equation (the constant term). Be sure to save the changes once you are done.
6. Click “Solve the model and examine the results”.

If you do this experiment for the 1994–1998 period, you will duplicate the results in Table 1 in Subsection 4.1.2, “Estimated Effects of a Positive Inflation Shock,” in **MM**.

2.7 US Dollar Depreciation

This experiment shows that a depreciation of the dollar is inflationary and contractionary. It is contractionary because the negative effects from the increase in prices more than offset the positive effects from a decrease in imports and increase in exports.

1. Click “Solve” under “MCJ Model” in the left menu and copy MCJBASE to a dataset you have named.
2. Click “Set prediction period” and set the period to be 2000 through 2005.
3. Click “Use historical errors” and set the option to use the historical errors.
4. Click “Drop or add equations” and drop the exchange rate equation (E equation) for JA, AS, KO, NZ, PH, and EU. Also, drop the exchange rate equation (H equation) for ST, UK, DE, NO, and SW.
5. Click “Change exogenous variables” and ask one at a time to change the values of E for CA, JA, AS, KO, NZ, PH, EU, SO, SA, VE, CO, JO, SY, ID, MA, PA, TH, CH, AR, BR, CE, ME, and PE. Ask to multiply each value by 0.9. Be sure to save the changes once you are done.
6. Click “Solve the model and examine the results”.

Chapter 3

Estimated Effects of a Yuan Appreciation

This chapter presents two of the experiments in Section 4.5, *Estimated Macroeconomic Effects of a Chinese Yuan Appreciation*, in **MM**. The first experiment is the one in Table 1, and the second experiment is the one in Table 4.

3.1 Yuan Appreciation: Full Version of the Model

This experiment duplicates the results in Table 1.

1. Click “Solve” under “MCJ Model” in the left menu and copy MCJBASE to a dataset you have named.
2. Click “Set prediction period” and set the period to be 1999 through 2008.
3. Click “Use historical errors” and set the option to use the historical errors.
4. Click “Change exogenous variables” and ask to change *CHE* for China. Ask to multiply each of the existing values by .75. Hit Enter and then “Commit to Changes.”
5. Click “Solve the model and examine the results”.

The differences between the new forecast values and the base values are the estimated effects of the yuan appreciation. (Remember that a decrease in *CHE* is an appreciation of the yuan.)

3.2 Yuan Appreciation: Chinese PY Equation Dropped

This experiment duplicates the results in Table 4.

1. Click “Solve” under “MCJ Model” in the left menu and copy MCJBASE to a dataset you have named.
2. Click “Set prediction period” and set the period to be 1999 through 2008.
3. Click “Use historical errors” and set the option to use the historical errors.
4. Click “Drop or add equations,” click China, and uncheck the CHPY box.
5. Click “Change exogenous variables” and ask to change *CHE* for China. Ask to multiply each of the existing values by .75. Hit Enter and then “Commit to Changes.”
6. Click “Solve the model and examine the results”.

The differences between the new forecast values and the base values are the estimated effects of the yuan appreciation with the Chinese *PY* equation dropped.

Chapter 4

Is Fiscal Stimulus a Good Idea?

This chapter presents two of the experiments in Section 4.6, *Is Fiscal Stimulus a Good Idea?* in MM.

4.1 Table 1: Transfer Payment Multipliers

This experiment is the one used for the results in Table 1 in Subsection 4.6.4, *Transfer Payment Multipliers*, in MM.

1. Click “Solve” under “MCJ Model” in the left menu and copy MCJBASE to a dataset you have named.
2. Click “Set prediction period” and set the period to be 1992 through 2005.
3. Click “Examine the results without solving the model.” List the values of YS , $PSI13$, JG , HG , JM , HM , JS , HS , and $STATP$ for 1992:1–2005:4. Compute for each quarter:

$$GDPRS = YS + PSI13(JG \cdot HG + JM \cdot HM + JS \cdot HS) + STATP$$

Then take 1.0 percent of each of the values of $GDPRS$, and call them the “ $TRGHQ$ increases.” Then return to the main menu page.

4. Click “Use historical errors” and set the option to use the historical errors.
5. Click “Change exogenous variables” and ask to change $TRGHQ$ for the United States. Type in the $TRGHQ$ increases quarter by quarter. Be sure to save the changes once you are done.
6. Click “Solve the model and examine the results”.

4.2 Table 5: Results for WAIT, RULE: 1992:1–2005:4

This experiment is the one used for the results in Table 3 in Subsection 4.6.6, *Results*, in MM.

1. Click “Solve” under “MCJ Model” in the left menu and copy MCJBASE to a dataset you have named.
2. Click “Set prediction period” and set the period to be 1992 through 2005.
3. Click “Examine the results without solving the model.” List the values of YS for 1992:1–2005:4. Then for 1992:1 take 0.5 percent of YS , for 1992:2 take 1.0 percent, for 1992:3 take 1.5 percent, for 1992:4–1993:4 take 2.0 percent, for 1998:1 take *minus* 0.5 percent, for 1998:2 take *minus* 1.0 percent, for 1998:3 take *minus* 1.5 percent, and for 1998:4–1999:4 take *minus* 2.0 percent. Call these the “ $TRGHQ$ changes.” Then return to the main menu page.
4. Click “Use historical errors” and set the option to use the historical errors.
5. Click “Change exogenous variables” and ask to change $TRGHQ$ for the United States. Type in the $TRGHQ$ changes quarter by quarter. Be sure to save the changes once you are done.
6. Click “Solve the model and examine the results”.

Chapter 5

Estimated European Inflation Costs

This chapter explains how to perform the German monetary policy experiment in Section 5.1, *Estimated European Inflation Costs from Expansionary Policies*, in **MM**. It duplicates the results in Table 1 in this section. This is a nice example for learning some of the features of the MCJ model and for learning how to work with it. Once you have mastered this experiment, you may want to perform others to examine what else macro policies might have done in the 1980s to reduce European unemployment and at what price level and inflation costs.

1. Click “Solve” under “MCJ Model” in the left menu and copy MCJBASE to a dataset you have named.
2. Click “Set prediction period” and set the period to be 1982 through 1990.
3. Click “Use historical errors” and set the option to use the historical errors.
4. Click “Drop or add equations” and for the Germany drop the *RS* equation (equation 7).
5. Click “Change exogenous variables” and ask to change *GERSA* for Germany. (NOTE: This is *GERSA*, not *GERS*. See the discussion in Chapter 2, Section 2.5, of this workbook.) Then add -1.0 for 19821-19834, add -.75 for 19841-19854, add -.5 for 19861-19874, and add -.25 for 19881-19904. Be sure to save the changes once you are done.
6. Click “Solve the model and examine the results”.

Chapter 6

Testing for a New Economy in the 1990s

This chapter explains how to perform the “no stock market boom” experiment in Section 5.3, *Testing for a New Economy in the 1990s*, in **MM**.

1. Click “Solve” under “MCJ Model” in the left menu and copy MCJBASE to a dataset you have named.
2. Click “Set prediction period” and set the period to be 1995 through 2002.
3. Click “Use historical errors” and set the option to use the historical errors.
4. Click “Drop or add equations” and for the United States drop the CG equation (equation 25).
5. Click “Change exogenous variables” and ask to change CG for the United States. Ask to replace each existing value with 126.4. Hit the enter key and then be sure to save the changes once you are done.
6. Click “Solve the model and examine the results”.

Chapter 7

Policy Effects in the Post Boom U.S. Economy

This chapter explains how to perform the seven experiments in Section 5.4, *Policy Effects in the Post Boom U.S. Economy*, in MM.

7.1 Experiment 1: No Tax Cuts

1. Click “Solve” under “MCJ Model” in the left menu and copy MCJBASE to a dataset you have named.
2. Click “Set prediction period” and set the period to be 2000 through 2004.
3. Click “Use historical errors” and set the option to use the historical errors.
4. Click “Drop or add equations” and for the United States drop the CG equation (equation 25) and the RS equation (equation 30).
5. Click “Change exogenous variables” and ask to change $D1G$ for the United States. Change the first quarter of the prediction period to be 2000:4 (not 2000:1) and the last quarter of the prediction period to be 2004:3 (not 2004:4). Then ask to replace each existing value with the actual value of $D1G$ in 2000:3, which is 0.0572. Hit the enter key and then be sure to save the changes once you are done.
6. Click “Solve the model and examine the results”.

The model will be solved for the entire 2000:1–2004:4 period, but the period of interest is only 2000:4–2004:3. You can ignore the first three quarters of 2000 (there are no changes here anyway) and the last quarter of 2004.

7.2 Experiment 2: No G Increase

1. Click “Solve” under “MCJ Model” in the left menu and copy MCJBASE to a dataset you have named.
2. Click “Set prediction period” and set the period to be 2000 through 2004.
3. Click “Use historical errors” and set the option to use the historical errors.
4. Click “Drop or add equations” and for the United States drop the CG equation (equation 25) and the RS equation (equation 30).
5. Click “Examine the results without solving the model.” List the values of COG and YS for 2000:1–2004:4. Compute COG/YS for 2000:3, and call this γ . This value is 0.042657. For the quarters 2000:4–2004:3, compute γYS , and call these the “new values of COG .” Then return to the main menu page.
6. Click “Change exogenous variables” and ask to change COG for the United States. Then enter quarter by quarter the new values of COG for 2000:4–2004:3. (Make sure to save the changes once you are done.)
7. Click “Solve the model and examine the results”.

The model will be solved for the entire 2000:1–2004:4 period, but the period of interest is only 2000:4–2004:3. You can ignore the first three quarters of 2000 (there are no changes here anyway) and the last quarter of 2004.

7.3 Experiment 3: No RS Decrease

1. Click “Solve” under “MCJ Model” in the left menu and copy MCJBASE to a dataset you have named.
2. Click “Set prediction period” and set the period to be 2000 through 2004.
3. Click “Use historical errors” and set the option to use the historical errors.
4. Click “Drop or add equations” and for the United States drop the CG equation (equation 25) and the RS equation (equation 30).
5. Click “Change exogenous variables” and ask to change RS for the United States. Change the first quarter of the prediction period to be 20004 (not 20001) and the last quarter to be 20043 (not 20044). Then ask to replace

each existing value with 6.017. (6.017 is the actual value of RS in 2000:3, which you can see from the page you are on.) Hit the enter key and then be sure to save the changes once you are done.

6. Click “Solve the model and examine the results”.

The model will be solved for the entire 2000:1–2004:4 period, but the period of interest is only 2000:4–2004:3. You can ignore the first three quarters of 2000 (there are no changes here anyway) and the last quarter of 2004.

7.4 Experiment 4: No Stimulus—Experiments 1, 2, and 3

1. Combine experiments 1, 2, and 3, i.e., change $D1G$, COG , and RS .

7.5 Experiment 5: No Stimulus and No Stock Market Decline

1. Do the set up for experiment 4 and then do the following extra steps.
2. Click “Change exogenous variables” and ask to change CG for the United States. Then type in the following values. (Make sure to save the changes once you are done.)

	CG
2000.4	233.6364377
2001.1	235.1029462
2001.2	236.3933658
2001.3	237.8985975
2001.4	237.9940319
2002.1	238.9499975
2002.2	239.0618679
2002.3	239.0188709
2002.4	239.7247147
2003.1	240.5048411
2003.2	241.4795930
2003.3	241.7344321
2003.4	244.9782530
2004.1	247.7131508
2004.2	250.0174220
2004.3	253.1941501

3. Click “Solve the model and examine the results”.

(These are the exact values of CG used in the experiment.)

7.6 Experiment 6: No Stimulus and No Export Decline

1. Do the set up for experiment 4 and then do the following extra steps.
2. Click “Examine the results without solving the model.” List the values of EX and YS for 2000:1–2004:4. Compute EX/YS for 2000:3, and call this γ . This value is 0.11125. For the quarters 2000:4–2004:3, compute $1000(\gamma YS - EX)$, and call these the “ $USXS$ differences.” Then return to the main menu page.
3. Click “Change exogenous variables” and ask to change $USXS$ for the United States. Type in the $USXS$ differences quarter by quarter. (The new values are then the base values plus the $USXS$ differences.) The relevant period is 2000:4–2004:3 . (Make sure to save the changes once you are done.)
4. Click “Solve the model and examine the results”.

This experiment is designed to keep U.S. exports, EX , equal to γ times potential output, YS , where γ is the ratio of EX to YS in 2000:3. Originally this was done by exogenous changes in other countries’ demands for U.S. goods. It is, however, easier just to change $USXS$ in the manner above, which has been done here.

7.7 Experiment 7: Experiments 5 and 6 Combined

1. Combine experiments 5 and 6.

Chapter 8

Estimated Effects of the U.S. Stimulus Bill

This chapter presents the stimulus experiment in Section 5.5, *Estimated Macroeconomic Effects of the U.S. Stimulus Bill*, in **MM**. The MCJ model forecast is the baseline forecast for this experiment.

8.1 Stimulus Experiment

This experiment duplicates the results in Table 4 in Subsection 5.5.3, *The Stimulus Experiment*, in **MM**.

1. Click “Solve” under “MCJ Model” in the left menu and copy MCJBASE to a dataset you have named.
2. Click “Set prediction period” and set the period to be 2009 through 2020.
3. Click “Use historical errors” and set the option to use the historical errors.
4. Click “Change exogenous variables” and ask to change *TRGHQ* for the United States. Then type in the following values in the “New-Base” boxes:

	TRGHQ
2009.2	-79.0
2009.3	-91.4
2009.4	-91.4
2010.1	-91.4
2010.2	-91.4
2010.3	-91.4
2010.4	-25.4
2011.1	-25.4
2011.2	-25.4
2011.3	-25.4
2011.4	-2.8
2012.1	-2.8
2012.2	-2.8
2012.3	-2.8
2012.4	-2.7

Then ask to change *COG* for the United States. Then type in the following values in the “New-Base” boxes:

	COG
2009.2	-5.4
2009.3	-7.6
2009.4	-7.5
2010.1	-7.5
2010.2	-7.5
2010.3	-7.4
2010.4	-7.9
2011.1	-7.8
2011.2	-7.8
2011.3	-7.7
2011.4	-6.0
2012.1	-5.9
2012.2	-5.9
2012.3	-5.8
2012.4	-3.9

Then click “Commit to Changes.”

5. Click “Solve the model and examine the results”.

The differences between the new forecast values and the base values are the *negative* of the estimated effects of the stimulus bill. The new values are estimates

assuming no stimulus bill, and the base values are estimates assuming the stimulus bill (which is the actual situation since the bill passed). The signs are reversed in Table 4 in Subsection 5.5.3 in **MM**.

Chapter 9

What It Takes to Solve the U.S. Deficit Problem

This chapter presents results in Section 5.6, *What It Takes to Solve the U.S. Government Deficit Problem*, in **MM**. The MCJ model forecast is the baseline forecast for these results.

9.1 Table 1: Transfer Payment Multipliers

This experiment is the one used for the results in Table 1 in Subsection 5.6.3, *Transfer Payment Multipliers*, in **MM**.

1. Click “Solve” under “MCJ Model” in the left menu and copy MCJBASE to a dataset you have named.
2. Click “Set prediction period” and set the period to be 2014 through 2022.
3. Click “Examine the results without solving the model.” List the values of YS , $PSI13$, JG , HG , JM , HM , JS , HS , and $STATP$ for 2014:1–2022:4. Compute for each quarter:

$$GDPRS = YS + PSI13(JG \cdot HG + JM \cdot HM + JS \cdot HS) + STATP$$

Then take 1.0 percent of each of the values of $GDPRS$, and call them the “ $TRGHQ$ increases.” Then return to the main menu page.

4. Click “Use historical errors” and set the option to use the historical errors.

5. Click “Change exogenous variables” and ask to change $TRGHQ$ for the United States. Type in the $TRGHQ$ increases quarter by quarter. Be sure to save the changes once you are done.
6. Click “Solve the model and examine the results”.

9.2 Table 2: Base Run

The base run in Table 2 in Subsection 5.6.4, *The Base Run*, in **MM** is the MCJ model forecast. You can examine this forecast by doing the following.

1. Click “Solve” under “MCJ Model” in the left menu and copy MCJBASE to a dataset you have named.
2. Click “Set prediction period” and set the period to be 2006 through 2022.
3. Click “Examine the results without solving the model”.

9.3 Table 3: Transfer Payment Decrease of One Percent of GDP

This experiment is the one used for the results in Table 3 in Subsection 5.6.5, *The Alternative Run: Decreasing Transfer Payments*, in **MM**.

1. Click “Solve” under “MCJ Model” in the left menu and copy MCJBASE to a dataset you have named.
2. Click “Set prediction period” and set the period to be 2014 through 2022.
3. Click “Examine the results without solving the model.” List the values of YS , $PSI13$, JG , HG , JM , HM , JS , HS , and $STATP$ for 2014:1–2022:4. Compute for each quarter:

$$GDPRS = YS + PSI13(JG \cdot HG + JM \cdot HM + JS \cdot HS) + STATP$$

Let DDD be $1/12$ in 2014:1, $2/12$ in 2014:2, $3/12$ in 2014:4, ..., and $12/12$ from 2016:4 through 2022:4. Then take *minus* 1.0 percent of each of the values of $DDD \cdot GDPRS$, and call them the “ $TRGHQ$ decreases.” Then return to the main menu page.

4. Click “Change exogenous variables” and ask to change $TRGHQ$ for the United States. Type in the $TRGHQ$ decreases quarter by quarter. Be sure to save the changes once you are done.

9.3. TABLE 3: TRANSFER PAYMENT DECREASE OF ONE PERCENT OF GDP35

5. Click “Solve the model and examine the results”.